

TR-7750C

VHF Coastal Radio



- Flexible and modular
- Secure by design
- Innovative technology
- Analogue and VoIP (ED-137) interface
- Remote or local operation

Jotron 7000C-series VHF

Costal radio - coast to ship communication

The VHF Coastal radio is for coastal stations and offshore installations requiring high quality FM voice and digital selective calling (DSC). The radio is intended for use primarily as a coastal station providing communication between coast and ships.

Jotron radios have a worldwide reputation for outstanding performance in harsh environmental conditions. The mechanical design of the transceiver is based on the well proven Jotron 7000 series.

Excellent RF performance in congested areas

Careful analogue design is still the key issue to achieve the best collocation capabilities possible. The 7000 series of radios are designed with no compromises regarding the synthesizers and analogue front end. This together with a linear power amplifier design, strictly controlled by an ultra fast digital signal processor, makes the radio the ultimate choice for professional applications.

Advanced digital signal processing (DSP)

The receiver and transmitter use the most powerful digital signal processors to perform the intermediate frequency (IF) and the audio frequency (AF) filtering. In addition, all the modulation and demodulation tasks are performed in the signal processor. This means improved product control, less tuneable parts and improved reliability.

Remote control over Ethernet/RS232/RS485

The radio units has alternative ways of being remotely controlled, making them easy to fit into an existing infrastructure already available on the site. The radio units are controlled using SNMP v.3 (Simple Network Management Protocol) over UDP (User Datagram Protocol), this together with three 100BaseT ethernet interfaces, makes it easy to control the radios either by using Jotron Remote Control and Monitoring System or by a standard SNMP management application.

No tuneable parts

There are no tuneable parts inside the radio units. No tuning, nor special tools are necessary when changing frequency/modulation or to maintain the radio.

Easy set-up and control

All parameters can be set and adjusted electronically from the front panel or from the remote interface. The front panel contains a LED display and three push buttons that are used to set up the radio – no external equipment like a PC or a signal generator are necessary to control the frequency or to adjust any parameter internally in the radio.

FM and DSC operation

The radio can operate either in FM mode or in DSC mode. The FM channel bandwidth (12.5 or 25 kHz) is automatically selected by the channel choice. The DSC mode is used when the radio is operated as a DSC transceiver, messages to/from the radio are either communicated on the LAN or over the analogue line interface.

Compact and rugged design

The VHF Coastal radio TR 7750C consist of a transmitter unit (TA 7650C) and receiver unit (RA 7203C). The receiver unit is a complete stand-alone receiver with built in power supply weighting only 1.7 kg. The transmitter unit weighs only 3.0 kg, but needs an additional 1.3 kg power supply.

A complete transceiver consists of 3 units (transmitter, receiver and power supply) and the total weight is only 6.0 kg. This modular and compact design is

the perfect choice for distant sites that are hard to reach.

Continuous duty cycle

The transmitter is designed for continuous duty cycle. This makes the radio the perfect choice for messaging systems that requires high duty cycle.

The unique cooling concept used on the transmitter keeps the temperature low and the operational lifetime of the equipment high.

BITE system that detects failures

The BITE system continuously monitors vital parts of the radio units. An error is instantly detected and reported in multiple ways. The unique main/standby concept of the Jotron 7000 series can automatically switch the operation to a standby set upon an error, providing seamless communication for the user.

Keying options

Keying options available in the transmitter, includes positive and negative voltages (up to 50 V), keying to ground and phantom keying on the audio line. In addition the key options includes in-band tone signalling (both ways; ptt and squelch) with configurable tones and levels for easy integration with the VCS system.



Features

Using LAN only

The coastal radios are equipped with an industry-standard set of protocols communicating through a Local Area Network. This feature may be used extensively, and the radios are designed with a LAN-only option in mind. The radio supports both IPv4 and IPv6.

VoIP

The radios stream audio according to the EuroCAE ED137 standard for Voice over IP (VoIP). This transfers voice data to/from the radios using the network connection only, hence the traditional E and M interface may remain disconnected in this case. At the same time, the network may be used concurrently for radio parameter setup and surveillance.

SNMP

An implementation of the Simple Network Management Protocol (SNMP) is running inside the radio. Each radio works as an independent SNMP-agent, and may be managed by either a freely available MIB-browser or by Jotron Remote Control and Monitoring System. Due to the fact that SNMP is a standard protocol, customer specific implementations are made easy. The MIB file will be made accessible upon request.

Complete BITE System

Built In Test Equipment (BITE) will monitor the internal status of the radio continuously. If a parameter is outside its legal range, an alarm condition will be reported in several ways. LED's and dedicated hardware lines are set to reflect the error condition, in addition to generating SNMP traps for alarm reports to the remote system.

Audio Line Interface

The coastal radio is designed with an analogue interface for the voice communication by using 4 wire E and M within the frequency range of 300-3400 Hz.



Inband squelch and keying

At radio sites where the number of interfacing lines are limited, inband features will make installations easier. The inband filters are sharp, narrow notch filters generated dynamically according to the parameters set. The transmitter has programmable inband frequency and detection level for keying. No residual inband tones will be present in the final RF signal. The receiver has programmable output frequency and output level for squelch operation. By using this option, the audio line interface might be limited to 4 wires only.

Built-in DSC modem

The coastal radio has a built-in modem for DSC operation. This modem interfaces to remote system on TCP/IP. Upon receipt of a valid DSC frame on the TCP/IP interface, the radio will generate the DSC message on air according to DSC specification.

If network operation is not desired, the traditional E and M interface may be used to deliver already modulated DSC messages on the audio lines.

Remote operation using RS232 or RS485

The radios may be controlled using RS232 and/or RS485 as well. The same functionality as given through the SNMP protocol is available. Protocol document is available upon request.

On-site operation

The radios may be fully controlled on-site using the display, buttons and encoder. BITE measurements may be read out as well. Supervisors may restrict the access-levels of the radio to prevent unintentional setting of parameters.

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Security features

- Jotron is ISO 27001 certified
- Secure development (Based on BSA and NIST 800-218 Framework for Secure Software)
- Coding conventions and secure coding recommendations (CERT C/C++)
- Static code analysis
- Fuzz testing on network protocols
- Secure update with cryptographically signed executables for enhanced installation security
- All interfaces supported with cryptographic protocols. Individually configurable.
- Modular design to enhance security and isolation (layered structure)
- Detection of Denial of Service (DoS) attacks
- Role-based access control and authentication
- Secure monitoring through Simple Network Management Protocol Version 3 (SNMPv3)
- Encrypted communication and storage protection
- Firewall enabled
- Audit trails, alarms, event logs and backups

Standards

FM, F3E, G3E: ITU-R M.489-2, ETSI EN 301929 (v2.1.1)

G2B, DS: ITU-R M.489-2, ITU-R M.493-15, ITU-R M.1080-0, ITU-R M.821-1, ETSI EN 301929 (v2.1.1)

Voice over IP: EUROCAE ED-137 (B, C) part 1,4 and 5 (where applicable to maritime radios)

ENVIRONMENTAL ALL UNITS	SPECIFICATIONS
Temperature range	Operating: -20°C to +55°C, storage: -40°C to +70°C
Humidity	90% @ +40°C (non condensing)
Free fall	ETSI EN 300019-2-2(v2.1.2), method: IEC 60068-2-32
Random vibration	ETSI EN 300019-2-2(v2.1.2), method: IEC 60068-2-64
Bump	ETSI EN 300019-2-2(v2.1.2), method: IEC 60068-2-29
EMC	EN 301843-2, EN 301489-1, EN 60945 (partly applicable), FCC rule 80, IC RSS-182
Safety	IEC 62368-1:2018
RoHS	EN 50581:2012

Dimension drawings



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